F. Public Facilities

1. Public Water Facilities

Water supply for the city is drawn from the Lloyd Aquifer through eight deep wells (over 1,200 feet in depth). In the vicinity of Long Beach, the Lloyd Aquifer varies between 300 and 400 feet thick at depths varying between 1,100 and 1,500 feet below sea level. A 200 to 400 foot thick layer of clay separates this aquifer from the Magothy formation above and currently protects it from salt-water contamination. There are no other freshwater bodies in Long Beach. During 2005, the total amount of water pumped by the City of Long Beach was 1.223 billion gallons, of which approximately 92% was billed directly to consumers.[1]

The water is pumped to a treatment plant, where iron is the major element that is removed, then stored in tanks. Three storage tanks, a 0.5 million gallon (mg) cylindrical standpipe, a 0.75 mg elevated water tower, and a 2 mg ground tank, are located along the bayfront. The approximately 90 year-old standpipe is in disrepair and needs immediate replacement. The 70 year-old water tank will require replacement in approximately ten years. The ground tank is in good condition.

Water usage is approximately 4.5 million gallons (mg) a day. Total water storage capacity is approximately 3.25 million gallons, which is considered undersized because it is not equal to one day of use. To increase water conservation, approximately two years ago the City implemented a graduated water pricing scale to increase fees with increased water usage.

The water treatment facility located along the bayfront is in good to excellent condition and is generally well maintained. Both the City and the County monitor water quality, looking for early signs of saltwater intrusion and other components, which would affect water quality. New York State has issued a moratorium on extraction of water from the Lloyd Aquifer by additional communities to prevent the chance of saltwater intrusion. In 2006, the City of Long Beach did not have any violations relative to water quality according to Federal and State standards.

The City of Long Beach routinely monitors for different parameters and contaminants in the drinking water, as required by Federal and State laws. Iron content in the water is high, but the City removes this to acceptable levels.

The 2006 Water Quality Report information is located in Appendix _____ .

Precipitation is the sole source of all naturally occurring fresh ground water on Long Island. Seasonal or long-term fluctuations in precipitation volume and, thus, in recharge, are reflected by the water levels in all aquifers. Under natural (predevelopment) conditions, about 50 percent of the precipitation that falls on the land surface recharges the ground-water reservoir, but this percentage can vary locally, depending on the climate, geography and land use. In developed areas, such as Long Beach, much of the

[1] Important Information Regarding Our Water Supply. Public Supply Identification No. 2902834. May 2007.

overland flow is diverted through a system of storm drains that discharge either to recharge basins or stream channels.[2]

Human activities on Long Island have caused stresses within the ground-water system that have altered the natural balance and produced large-scale changes in the quantity, movement and quality of groundwater in many parts of Long Island. The major causes of stress are increased ground water pumping, installation of storm sewers, sanitary sewers, recharge basins and cesspools, construction of roads, parking lots and other impervious surfaces. Additionally, significant draws from the Lloyd Aquifer have left it increasingly susceptible to saltwater intrusion, particularly in coastal, highly urbanized areas. Saltwater intrusion has indeed occurred in the past in Kings, Queens and southwestern Nassau Counties. [3] Fortunately the level of chlorides (an indicator for saltwater) has remained relatively constant (3-6 mg/l) in Long Beach drinking water, over the years.

Approximately 75 percent of the City's water mains have been upgraded since their original installation, and they are currently in good to fair condition. The remaining 25 percent are located largely in the center of the city. In the Walks neighborhood, the water lines are located in narrow areas between private houses, presenting repair challenges. Water pressure is poor in the Walks area due to sediment build-up. Additionally the older iron pipes develop scaling which also reduces capacity. Overall, water pressure in the city is generally good, but quality is sometimes affected by mineral buildup in the distribution facilities.

2. Stormwater Management

The city is located largely within 100-year and 500-year flood boundaries, as defined by the Federal Emergency Management Agency (FEMA). The highest elevation level is located along Broadway and the lowest elevation levels are located along the bayfront, creating bayfront flooding during major storms. The city's stormwater management system is a combination of old, open dirt street gutter systems discharging directly to the bay and new underground piped systems also discharging to the bay. Approximately 60 percent of rainfall is discharged directly to the bay and 40 percent ends up in dirt gutters alongside roads or percolates in the sand. On any streets that are repaved, paved gutters and piped stormwater systems are installed to convey water to the bay. The street system is established such that every other boulevard is a watershed, i.e., all water from Lindell and New York Avenues will flow to the system on Grand Avenue, for example. An innovation to improve the stormwater flow in the city was the addition of "tide flex valves" on the end of outfall pipes that carry water to the bay. Theoretically, the valves remain closed while in the water so they do not back up and cause flooding.

Currently the outfall pipes in the City range from 15 to 36 to 48 inches in diameter and discharge to Reynolds Channel. To prevent flooding in the rising tides, the outfalls are fitted with tide flex valves. The current conditions of the tide flex valves fitted on the pipes are unknown, but many are not functioning due to lack of maintenance and need for repair, allowing tide waters to flow back into the neighborhoods, thereby causing flooding. Appendix _____ provides outfall data for the City of Long Beach.

[2] Ibid.
[3] Ibid.

In August 2007, the City enacted two laws, Sec. 1 Chapter 25, Article VI and Article VII of the Code of Ordinances of the City of Long Beach,__ pursuant to the EPA Phase II Storm Water Management requirements.

The purpose of Article VI, Stormwater Management, is to establish minimum stormwater management requirements and controls to protect and safeguard the general health, safety and welfare of the public and to conform to the substantive requirements of the New York State Pollutant Discharge Elimination System (SPDES) and the National Pollutant Discharge Elimination System (NPDES). This article seeks to achieve the following:

- Meet the requirements of minimum measures 4 and 5 of the SPDES General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems;
- Require land development activities to conform to SPDES General Permit for Construction Activities;
- Minimize increases in stormwater runoff from land development activities in order to reduce flooding, siltation, increases in stream temperature, and streambank erosion and maintain the integrity of stream channels;
- Minimize increases in pollution caused by stormwater runoff from land development activities;
- Minimize the total annual volume of stormwater runoff which flows from any specific site during and following development to the maximum extent practicable; and
- Reduce stormwater runoff rates and volumes, soil erosion, and nonpoint source pollution where possible, through stormwater management practices and to ensure that these management practices are maintained.

The purpose of Article VII, Prohibition of Illicit Discharges, Activities, and Connections to Separate Storm Sewer System, is to regulate non-stormwater discharges to the Municipal Separate Storm Sewer System (MS4) to the maximum extent practicable. The objectives of the ordinance are:

- To meet the requirement of the State Pollutant Discharge Elimination System (SPDES) General Permit for Storm Water Discharges from MS4s;
- To regulate contribution of pollutants to the MS4 since such systems are not designed to accept, process or discharge non-stormwater wastes;
- To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with ordinance;
- To promote public awareness of the hazards involved in the improper discharge of non-stormwater.

Education of the public about non-point sources of pollution is a key issue, much of this pollution results from street litter flowing into catch basins. Currently storm water management programs in the City include a catch basin cleaning program and labeling storm drains. The current goal is to clean 20 percent of the ± 1800 storm drains per year. Over the past five years, ±600 have been cleaned.

3. Public Sewer Facilities

The City owns and operates a 7.5 million gallon wastewater treatment plant (WWTP). The WWTP takes in sanitary sewage flow from Long Beach and Lido Beach. Point Lookout will likely want to hook-up to the Long Beach system at some time. The plant was rehabilitated in 1990 and 2002 but still requires more improvements due to deferred maintenance. Treated effluence is discharged into the bay while solid material sludge is dewatered and carted to disposal facilities out of state. The WWTP currently operates on seven acres of bayfront property and is adjacent to the North Park residential neighborhood.

The New York State Department of Environmental Conservation and the United States Environmental Protection Agency are anticipated to apply more stringent effluence standards for WWTP discharge into the South Shore Estuary, including Reynolds Channel. This would require additional treatment and removal of nutrients from the treated effluent that is discharged into the bay, and the building of additional facilities. These nutrients, which include nitrogen, deplete oxygen in the water, which impairs fish. When the nitrogen in the water is decreased there will be an increase in the fish. Actions to decrease nitrogen discharge should also improve shellfish quality over time and help make the bay more vibrant over time.

Three wastewater pump stations, located on Park Avenue at Indiana Avenue, New York Avenue, and Roosevelt Boulevard, serve the WWTP, and are in need of reconstruction and upgrade. They are mechanically and structurally unsound, pose a major safety concern for employees, and create odor problems. Additionally, if the system were to fail, the back-up of raw sewage would occur in residential homes, causing a major health and environmental problem. Reconstruction of the pumps would cost approximately $5 to 6 million, and they would have to remain in operation during the reconstruction.

The existing condition of underground pipes is not good and many need repair, often causing streets to collapse along with collapsing pipes. Several pipes are located in high ground water areas, causing the older concrete pipes to dissolve and causing infiltration of water and eventual collapse. Sewer lines north of Park Avenue are generally considered to be in worse condition due to higher ground water. Additionally, in the Canals neighborhood, some concrete pipes have disintegrated altogether, resulting in the direct entry of raw sewage into the ground. When streets are reconstructed in accordance with the Roadway Evaluation Plan, sewer lines are also reconstructed with newer, stronger materials that are not affected by groundwater. Several streets in the Canals neighborhood are listed as priority streets for reconstruction. However, only about 15 to 20 percent of the streets and pipes have been replaced in the Canals neighborhood. Sewer lines are also of concern in the Walks neighborhood, where the lines are located behind private homes and are difficult to access.

In September 2007, Nassau County announced plans to consolidate sewage treatment in four municipalities with the County's Sewer and Storm Water Authority. A study of sewage treatment found that a County-wide sewer system is technically feasible, would

provide savings and would be better for the environment[4] Under the County plans, there is the potential to close the Long Beach facility and re-direct wastewater to the regional treatment plant at Bay Park. The County plan would result, a new pump station constructed in Long Beach in 2009 and sewage pumping operations, to utilize the Bay Park Plant, will commence in 2011. This agreement will potentially make approximately six of the seven acres currently utilized by the WWTP available for redevelopment.

[4] http://www.nassaucountyny.gov/agencies/CountyExecutive/NewsRelease/2007/9-25-2007....accessed 11/5/2007.

APPENDIX AT END OF DOCUMENT_____

Appendix_____-1[5]
2006 Water Quality Report

Contaminants or Constituents	Violation (Yes/No)	Date of Sample	Level Detected (Maximum) (Range)	Unit Measurement	MCLG	Regulatory Limit (MCL or AL)	Likely Source of Contaminant
MICROBIOLOGICAL							
Total Coliform	No	6/26/06	1 positive out of 40	Positive or Negative	n/a	MCL = More than 5% of monthly samples are positive	Commonly found in the environment
INORGANIC CONTAMINANTS							
Copper	No	Aug/Sept 2005	0.06(1)	mg/l	1.3	AL = 1.3	Corrosion of galvanized pipes; Erosion of natural deposits
Lead	No	Aug/Sept 2005	1.8(1)	µg/l	0	AL = 15	Corrosion of household plumbing systems; Erosion of natural deposits
Sodium	No	12/11/06	6.3- 9.4	mg/l	n/a	No MCL(3)	Naturally occurring
Zinc	No	12/11/06	ND – 0.1	mg/l	n/a	MCL = 5	Naturally occurring
Chloride	No	12/11/06	2.0 – 8.0	mg/l	n/a	MCL = 250	Naturally occurring
Sulfate	No	6/14/06	13.0 – 32.7	mg/l	n/a	MCL = 250	Naturally occurring
Calcium	No	12/11/06	2.8 – 3.6	µg/l	n/a	None	Naturally occurring
Iron(2)	No	Daily	290(2)	µg/l	n/a	MCL = 300	Naturally occurring
Barium	No	12/11/06	ND- 0.05	ug/l	n/a	MCL=2.0	Naturally occurring
Beryllium	No	12/11/06	ND- 0.002	ug/l	n/a	MCL=2.0	Naturally occurring
RADIONUCLIDES							
Gross Alpha	No	12/11/06	ND- 2.6	pCi/L	n/a	MCL = 15	Naturally occurring
Gross Beta	No	06/29/06	ND – 1.9	pCi/L	n/a	MCL = 50	Naturally occurring

[5] Important Information Regarding Our Water Supply. Public Water Supply Identification No. 2902834, May 2007.

Radium 228	No	12/11/06	ND – 2.8	pCi/L	None	No MCL	Naturally occurring
VOLATILE ORGANIC CONTAMINANTS							
Total Trihalomethane	No	9/11/00	ND – 4.7	µg/l	n/a	MCL = 80	Disinfection byproducts
Haloacetic Acids	None detected	-	None detected	-	-	MCL = 60	Disinfection byproducts

Notes:
MCL (Maximum Contaminant Level) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible.
MCLG (Maximum Contaminant Level Goal) – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
AL (Action Level) – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow

Milligrams per litter (mg/l) – Corresponds to one pert of liquid in one million parts of liquid (parts per millions – ppm).

pCi/L – pico Curries per Liter is a measure of radioactivity in water.

Micrograms per liter (ug/l) – Corresponds to one part of liquid in one billion parts of liquid (parts per billion – ppb).

ND (Non-detects) – Laboratory analysis indicates that the constituent is not present

(1) – During 2005 the City collected and analyzed 30 samples for lead and copper. The 9% percentile level is presented in the table. The action levels for both lead and copper were not exceeded at any site tested. Resampling is scheduled for 2008.

(2) Iron levels presented represent samples taken after the iron removal treatment facility.

(3) No MCL has been established for sodium. However, 20 mg/l is a recommended guideline for people on high restricted sodium diets and 270 mg/l for those on moderate sodium diets.

APPENDIX_____
Outfall Data for the City of Long Beach[6]

LOCATION		SIZE	TYPE OF PIPE	TIDEFLEX YES/NO	INV.
1	OHIO & THE BAY	30"	DI	YES	
2	CONNETICUT & THE BAY	36"		YES	
3	GEORGIA & THE BAY	30"		YES	
4	INDIANA & THE BAY (west)	18"?		YES	
5	INDIANA & THE BAY (middle)	12"		NO	
6	INDIANA & THE BAY (east)	6"		NO	
7	MINNESOTA & THE BAY	24"		YES	
8	TENNESSEE & THE BAY	36"		YES	
9	VIRGINIA & THE BAY	30"		YES	
10	WYOMING & THE BAY	30"		YES	
11	DELAWARE & THE BAY	30"		YES	
12	ARIZONA & THE BAY	36"		YES	
13	PENNSYLVANIA & THE BAY	36"		YES	
14	W.CHESTER (700 blk.) AND THE BAY	15"	RCP	YES	
15	GRAND BLVD. & THE BAY	60"	RCP	YES	
16	JUST E/O GRAND & THE BAY	10"	CI	YES	
17	LINDELL & THE Bay	18"	CI	YES	
18	WASHINGTON & THE BAY	48"		YES	
19	LAFAYETTE & THE BAY	18"		YES	
20	LAURELTON & THE BAY	42"		YES	
21	MAGNOLIA (east of Pine)	30" OR 36"		NO	
22	NATIONAL & THE BAY	NA		YES	
23	RIVERSIDE BLVD.	NA	RCP	NO	
*24	LONG BEACH RD. & THE BAY	NA		NO	
25	MONROE & THE BAY	NA	RCP	NO	
*26	btw. MONROE AND LINCOLN	6"	PVC	NO	
*27	btw. MONROE AND LINCOLN	6"	PVC	NO	
*28	btw. MONROE AND LINCOLN	12"	PVC	NO	
29	LINCOLN & THE BAY	48"	RCP	NO	
*30	btw. LINCOLN & FRANKLIN & THE BAY	8"?		NO	
*31	btw. LINCOLN & FRANKLIN & THE BAY	8"?		NO	
*32	btw. LINCLON & FRANKLIN ON THE BAY	8"?		NO	
33	FRANKLIN & THE BAY (btw. 481-491)	54"	RCP	NO	
34	STATE ST. & SARAZEN CANAL	NA		NO	
35	DOYLE ST. & THE BAY	10"	CI	YES	
36	ARMOUR ST. & THE BAY	12"	RCP	YES	
37	KERRIGAN ST. AND THE BAY	13"	CI	YES	2.41
38	DALTON ST. & THE BAY	12"	PVC	YES	
39	BOYD ST. & THE BAY	12"	RCP	YES	2.5

[6] Raab, Robert L, P.E., Commissioner of the Department of Public Works, City of Long Beach. Letter dated 4/2/07.

40	KIRKWOOD & THE BAY	12"	PVC	YES	
41	BARNES & THE BAY	12"	(removed at request of homeowner)		
42	FARRELL & THE BAY	20"	RCP	YES	
43	FARRELL & THE BAY	20"	RCP	YES	
44	VINTON & THE BAY	8"	CI	YES	
45	VINTON& HAGEN CANAL	NA		NO	
46	HARMON & THE BAY	18"	RCP	YES	
47	HARMON & THE BAY	15"	RCP	YES	
48	CURLEY & THE BAY	10"	PVC	YES	2.7
49	PINE & SARAZEN CANAL (west)	18"	DI	NO	0.75
50	PINE& SARAZEN CANAL (east)	18"	DI	NO	0.30
51	PINE & QUIMET CANAL (west)	18"	DI	NO	0.75
52	PINE & QUIMET CANAL (east)	18"	DI	NO	0.55
53	PINE & HAGEN CANAL (west)	15"	PVC	NO	1.01
54	PINE & HAGEN CANAL (east)	18"	DI	NO	0.78
55	CHESTER AND SARAZEN CANAL	NA		NO	
56	CHESTER AND QUIMET CANAL	NA		NO	
57	CHESTER AND HAGEN CANAL	NA		NO	

Notes:

NA	Not Available
*	**Outfall Does Not Belong to City**
DI	Ductile Iron
CI	Cast Iron
PVC	Polyvinylchoride
RCP	Reinforced Concrete Pipe